

WATER

CONSERVATION NEWS

“Building sustainability, reliability, and accountability through efficient water use”

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CUWCC and DWR Join Forces on Urban CIMIS Stations

By Kent Frame, Department of Water Resources

With the recent award of a Proposition 50 Water Use Efficiency Grant to the California Urban Water Conservation Council, we are pleased to report that California Department of Water Resources will join forces CUWCC to implement non-ideal sites for urban California Irrigation Management Information System (CIMIS) weather stations.

CIMIS manages a network of over 125 automated weather stations that collect weather data

from regions throughout California. The collected data is transferred to a central computer in Sacramento and used to estimate reference evapotranspiration (ET_o). ET_o is the amount of water that is lost to the atmosphere by the combined processes of evaporation and transpiration from standardized grass and/or alfalfa surfaces. The data is then made available to the public at www.cimis.water.ca.gov.

The siting of weather stations requires standardization of the surface on which the weather stations sit. This standardization is necessary because of the spatial and temporal variability of factors affecting evapotranspiration (ET), and the difficulty this variability creates in formulating equations for estimation of ET. Factors affecting ET include solar radiation, air temperature, relative humidity, and wind speed. These parameters are interdependent, spatially and temporally variable, and highly dependent on the nature and properties of surfaces over which their measurements are taken.

Researchers originally specified using grass and alfalfa as standard surfaces because of their adaptability to various climates and their biophysical similarity to many agricultural crops. The standardized grass and/or alfalfa surfaces on which the weather stations rest are known as “reference crops” and the weather stations that are sited on the surfaces are referred to as “reference stations.” This standardization requires that the reference crops have adequate fetch in all directions, completely shade the ground, and have ample supply of water.



These requirements were designed to simulate microclimates that are common over most irrigated surfaces.

Originally designed for agricultural purposes, CIMIS has adopted these weather station standards and has developed the other following major criteria in selecting sites for its weather stations:

- Site a station within the region it is meant to represent.
- Do not locate a station in a transition area between different climates.
- Avoid topographic depressions and high points.
- Avoid abrupt crop/vegetation changes or roads within 50 yards, wind obstructions or small rivers within 100 yards, larger rivers within 200 yards, and lakes within 1,000 yards of the site.

Weather stations not conforming to the basic definition of reference stations are commonly known as non-standardized or non – ideal sites. Urban regions are one of the environments that are likely to have a shortage of standardized reference sites

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Office of Water Use Efficiency Mission Statement

In cooperation with others, we promote the efficient and beneficial use of California's water resources to sustain our human and natural environment.

Five New Stations Added to the CIMIS Network

By Kent Frame

The number of stations in the California Irrigation Management Information System (CIMIS) network has been growing steadily ever since its creation in 1982. This is mainly because of the fact that more and more Californians realized the significance of the program and its potential water, money, and energy savings. Despite the staff and budget constraints, CIMIS managed to add five new stations since January 2005 bringing the total number of active CIMIS stations to 129. Historical data is also available for 68 inactive stations that have been removed from the network for various reasons. All of the new CIMIS stations also use landline phones for communication since cell phones can have significant communication problems in some areas of the state.

The five new stations are:

Auburn (#195) The Auburn CIMIS station was installed on February 16, 2005, and is located in the Sierra Foothill region of Placer County in DWR's Central District near the city of Auburn. It is owned by the Placer County Water Agency. Its geographic coordinates are 38.89°

North latitude and 121.1° West longitude with an elevation of 935 feet above sea level. The station stands on reference grass surface and therefore is referred to as a reference evapotranspiration (ET_o) station. A few of the CIMIS stations provide only weather data and do not report ET_o because of their poor sitting conditions. Such stations are referred to as non-ET_o stations.

Esparto (#196) The Esparto station is located in the Sacramento Valley region of Yolo County in Central District. It was installed on April 15, 2005, and is owned by Esparto District Chamber of Commerce. Its geographic coordinates are 38.69° North latitude and 122.14° West longitude with an elevation of 174 feet above sea level. It stands on reference grass surface and reports ET_o.

Palmdale (#197) The Palmdale station was installed on April 6, 2005, in the Los Angeles Basin region of Los Angeles County in Southern District near the city of Palmdale. The station is owned by the Sanitation District of Los Angeles County (SDLAC). It is located at 34.62° North latitude and 118.03° West longitude at 2,550 feet elevation above sea level. Well-maintained grass is the reference surface on which the station stands and is an ET_o station.

Santa Paula (#198) This station was installed on March 30, 2005, in the Central Coast Valleys region of Ventura County in DWR's Southern District near the city of Santa Paula. It is sited on a well-maintained grass reference surface and reports ET_o. The station is owned by the University of California Cooperative Extension. Geographic coordinates for the Santa Paula Station are 34.33° North latitude and 119.10° West longitude at an elevation of 218 feet above sea level.

Big Bear Lake (#199) The Big Bear Lake station is located near the city of Big Bear Lake in the San Bernardino region of San Bernardino County in Southern District. It is owned by the city of Big Bear Lake and is resting on a well-established turf on a golf course. The geographic coordinates for this station are 34.24° North latitude and 116.87° West longitude with an elevation of 6,910 feet.

If you are interested in having a CIMIS station in your area, please contact CIMIS representative in your district for more information. The CIMIS staff list and contact information can be found at: <http://www-cimis.water.ca.gov/cimis/welcomeStaff.jsp>.



Managing Agricultural Irrigation Drainage Water: A Guide for Developing Integrated On-Farm Drainage Management Systems

By Jose Faria

The California Department of Water Resources is offering to the public a technical manual containing information on the Integrated On-Farm Drainage Management (IFDM) implementation for professionals and technical support personnel. The technical manual is the second of two manuals published as part of an educational and outreach program

which was funded by EPA's 319(h) grants through the local Regional Water Quality Control Board. The first manual was published and distributed during 2003-2004 to landowners at a series of workshops. The Center for Irrigation Technology at California State University, Fresno (CIT) prepared the IFDM landowner and technical manuals under a subcontract with the

Westside Resource Conservation District. DWR-SJD wrote portions of the manuals, provided technical assistance in the document review process, and participated on the technical advisory committee.

The CIT and the Westside Resources Conservation District (WRCD) held two IFDM workshops during October 2005 in

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CALIFORNIA URBAN WATER CONSERVATION COUNCIL

The Price of Water Efficiency Is Eternal Vigilance

We have won many battles in water conservation. Water efficient showerheads, once viewed to be inadequate for hygiene, are now universally accepted and even required by law. In the 1980s, the 1.6-gallon per flush toilet was promoted by the water conservation community, but the plumbing industry denounced it as a faulty concept that would cause rampant clogs and sewer line obstructions throughout the nation. Now, more than 30 percent of toilets in the nation meet the 1.6-gallon per flush standard, yet the wastewater flows are uninterrupted and consumer satisfaction is excellent. Great progress in water efficiency has been achieved thus far, but additional threats remain.

Non-Water Supplied Urinals

Unfortunately, plumbing codes have sometimes unfortunately impeded water efficiency advancements; new code amendments can unintentionally (or purposely) restrict water conservation measures. As an example, the legality of non-water supplied urinals has been ambiguous in the Uniform Plumbing Code (UPC) versions to date. It is understandable that the code cannot anticipate every innovation in plumbing fixtures and it is reasonable for conflicts to occur when new and safe innovations first come into the marketplace.

The International Association of Plumbing and Mechanical Officials (IAPMO) recently approved amendments for the 2006 version of the UPC. It was anticipated by the entire water conservation community that the 3-year code amendment process would clarify and accom-

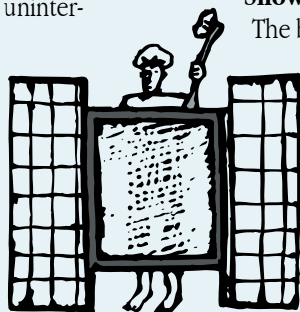
modate new and safe innovation to be included in the next version of the UPC. However, IAPMO has chosen to amend the code to purposefully bar all installations of non-water supplied urinals, contrary to all scientific evidence in support of the safety and reliability of these fixtures. If the State of California, its counties and cities adopt the 2006 version of the UPC, as currently written, an important measure to improve water efficiency will no longer be available to the State, water suppliers and consumers unless a legislative override is passed.



Showerheads

The battle for efficient showerheads was won long ago-or so we thought. State and federal laws restrict flow rates to 2.5 gallons per minute (GPM). The water conservation community believed that the law applied to the "shower experience."

The industry believes otherwise.

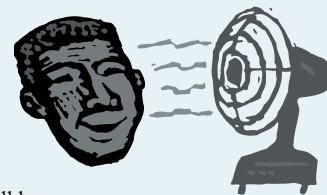


There is a growing trend among fixture manufacturers, builders, plumbers and consumers to "sidestep" the law by installing multiple showerheads in one shower. Some disguise the subversion by calling the water wasting showers "home spas." While each individual showerhead meets the legal requirements, the multiple showerheads will use 30 to 100 gallons for every shower. As a result, California may enact separate restrictions disallowing multiple showerheads. Another strategy for correction would be to amend the Federal Energy Policy Act of 1992, where the original showerhead standard was passed. In any event, the water conservation community must continue to fight a battle it thought it won more nearly fifteen years ago.

Energy Efficiency – or Water Efficiency?

The energy shortage in California emphasized the conflicts between energy conservation and water conservation. The rapid rise in energy costs have changed consumer choices in appliance purchases, and products are being developed to ensure great energy savings. Additional water consumption being exchanged for energy efficiency is especially likely to occur during the peak water use times of summer. While the water supplier implements intensive campaigns to reduce peak summer water use, new appliances may actually exacerbate the problem. Some appliances, such as ice makers and home air-conditioners, can yield great electrical savings by using water to remove the heat from the refrigerant in condenser coils, but can simultaneously increase water usage. Water-cooled air conditioners were not an economically viable product for homeowners in the past due to the high cost of the equipment. Now that electrical costs have risen, the savings of electricity more than justifies the high initial cost of the equipment.

CUWCC is currently working in cooperation with energy policy decision makers at the California Energy Commission to assure water is valued appropriately when traded for energy conservation. Water conservation is a long-term commitment. Great water efficiency improvements have been achieved, but there is no guarantee these improvements will be maintained. The challenge to the water conservation community is to maintain constant vigilance to ensure that the past savings gains will not be lost.



EPA Creates A National Water Efficiency Organization

Our time has finally come. The water conservation community nationwide is getting its very own national organization to promote water efficiency. CUWCC, under a grant from the US Environmental Protection Agency (EPA) has issued a draft report to recommend a framework for a national partnership on water use efficiency. This partnership organization will be composed of water supply agencies, product manufacturers and distributors, environmental groups, government organizations and others and will have the ability to develop cross-state initiatives, conduct needed water efficiency research, coordinate water efficiency project partners, and in general serve as a clearinghouse for water efficiency progress and cutting-edge change.

To design a program that best meets the needs of the water and related industries, CUWCC will:

- Conduct stakeholder workshops throughout the country to listen to potential partners to learn what is important to them;
- Conduct a nationwide survey of stakeholders through the internet;
- Inventory existing water efficiency organizations on a local and regional basis and learning from their experiences;
- Conduct three specialized focus groups to get feedback on proposed designs for the national organization
- Complete a report summarizing all the options and making recommendations

The draft report will likely be presented to EPA in early 2006, and the organization created sometime mid-2006. Comments on the draft report are welcome, especially with respect to a proposed name and a proposed location. The report is posted at www.cuwcc.org/national_cwe.lasso.

DWR Announces Second Round of Funding for Water Desalination

By Water Recycling and Desalination Staff

On October 25 and November 7, 2005, the California Department of Water Resources organized two public workshops in Sacramento and San Diego, respectively, to provide information to interested parties and accept comments on the Draft 2006 Water Desalination Proposal Solicitation Package (PSP), which was released October 4, 2005. This is the second funding cycle of a \$50 million water desalination

grant program that implements Chapter 6(a) of Proposition 50 (the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002). The program aims to assist local public agencies with the development of new potable water supplies through the construction of brackish water and ocean water desalination projects and help advance water desalination technology and its use by means of feasibility studies, research and development, and pilot and demonstration projects.



2006 Funding Cycle

This is the second cycle of this funding program. This cycle will grant \$21.5 million for the Fiscal Year 2005-06. The maximum funding limits per project are:

- *feasibility studies* \$250,000
- *research & development* \$500,000
- *pilot & demonstration* \$1.5 million
- *water desalination construction* \$3 million

Contract execution and disbursements are subject to the availability of funds.

Eligible Applicants

Eligible applicants include California public entities involved with water management activities including cities, counties, cities and counties, joint power authorities, public water districts, tribes, state agencies and other political subdivisions of the state. Also eligible are California and non-California entities such as non-profit organizations (including California watershed management groups), universities and colleges and federal agencies. To be eligible to receive a grant, at least 50 percent of the total cost of the project shall be met by matching funds or donated services from non-state sources. The draft PSP was released on October 4, 2005, and the proposals are due in February 2006.



The review process will be completed by April (2006) and awards are announced by May 2006.

For more information, contact Fawzi Karajeh at (916) 651-9669 or fkarajeh@water.ca.gov. For a copy of the PSP: www.owue.water.ca.gov/recycle/DesalPSP/DesalPSP.cfm.

Agricultural Water Management Information Resource Directory ***How Do You Know What Information is Out There to Assist You in Your Next Project?***

By Mike Wade

The Agricultural Water Management Council is developing an information-clearing-house and database directory for water management resources. With access to this information water providers can make informed decisions that maximize water use efficiency effectiveness, reduce costs and enhance environmental conditions as well as to improve district service to its users.

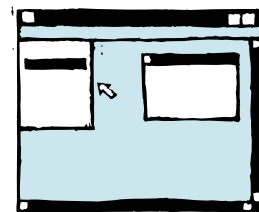


Currently, information relevant to agricultural water management is decentralized and scattered; there is no index that identifies what resources are available. Each agency, firm, or organization conducts its own research and studies with no coordi-

nated mechanism to bring the information back to the agricultural water community for application and use. As a result, it is difficult for water suppliers to have access to all the tools for optimal water management efficiency and conservation planning. The Council seeks to fill this communication gap by serving the agricultural water community with the promotion of information sources to meet their needs for education and reference.

The Council will research and identify available agricultural water management information sources and organize the findings into an online database and directory. This will include the review of models used to describe various water management activities, such as canal seepage, and regulating reservoir sizing that have a direct connection to cost-effective solutions

for implementing the AB 3616 Efficient Water Management Practices. The Agricultural Water Management Directory will be a collection of information services that are focused to the needs of agricultural water managers. The directory will also be accessible online. Users will be able to search the database by author, title, subject, and date. Timely access is required to enable the agricultural water community to properly manage its water resources.

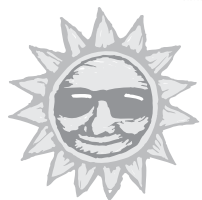


Look for the Agricultural Water Management Resources Directory Fall 2006. For more information visit www.agwatercouncil.org.

Energy Workshops

By Dave Todd

In 2005, At the request of the Governor's Office, the California Department of Water Resources sponsored a series of workshops entitled "Energy Workshops for Water and Wastewater Agencies" to ask utilities (and their customers) to shift water use off the peak energy demand period during Summer 2005.



A task force that included representatives from DWR, the California Energy Commission, Flex Your Power, Association of California Water Agencies, energy utilities,

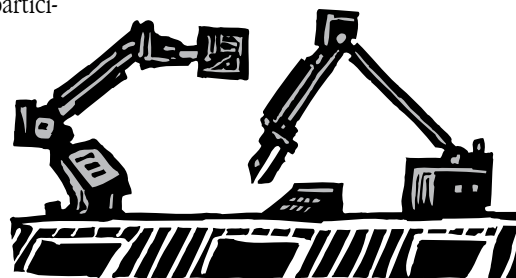
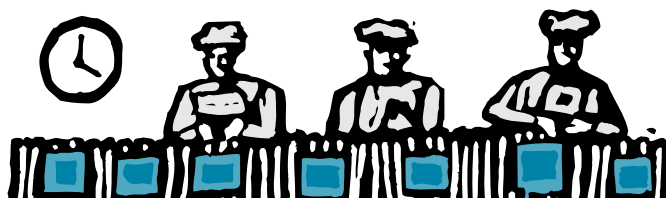
water and wastewater agencies, and consultants developed an agenda designed to explain why even though there is enough energy during the summer, the potential still existed for periodic regional shortages. Agenda topics included:

- Discussing and understanding the relationship between water use and energy demand
- Explaining why it is necessary to shift water use off the peak energy demand period
- Sharing strategies for shifting peak demand and identifying what utilities and their customers can do to prepare for 2006

The Office of Water Use Efficiency and Transfer's staff coordinated and partici-

pated in the series of three workshops conducted in Los Angeles, San Diego and San Jose. Approximately 48 representatives from water, wastewater, and energy utilities attended the Los Angeles workshop, 60 attended the San Diego workshop, and 103 attended the San Jose workshop. Media coverage included the Copley News Service in Los Angeles, KPBS public radio in San Diego, and KCBS news radio in San Jose.

Additional information about the workshops is available on the Office of Water Use Efficiency and Transfer's "Flex Your Power at the Tap" Web site at: www.owue.water.ca.gov.



Olivenbain Municipal Water District is Changing the Face of Conservation One Yard at a Time

By Olivenbain Municipal Water District Staff



The Olivenbain Municipal Water District has changed its water conservation efforts to focus more on the outdoor aspects as 60 percent of residential water use is typically outdoors. To commence this program, the District undertook a California-Friendly Landscape makeover for one of its customers, wherein a front lawn was converted into a California-Friendly yard that uses less water.

In April 2005, the District selected Encinitas residents Anne Michaux and her husband Joan Ceuterick as the winners of a free water-wise landscape makeover contest advertised to all District customers. Their yard was transformed from a 100 percent grass lawn to a California-Friendly landscape that meets the needs of the residents, is beautiful and saves water. "This yard serves as a community demonstration

garden of the richness and beauty that California-Friendly planting and landscape themes have to offer," stated Board Director Mark A. Muir. San Diego residents and gardening professionals are discovering the value of a yard that can bloom year round and use less water.

Many people believe that a colorful, lush, and vibrant garden needs lots of water. In reality, the same ends can be achieved through the application of California-Friendly gardening principles, resulting in a 35- to 70-percent water savings. Water-wise gardens often require less maintenance than a traditional yard so you will save time too. You can have almost any garden style you like and still save water. If important to your lifestyle, even higher water using materials such as turf or roses can be incorporated as long as materials

with the same water requirements are irrigated on the same line. "Since up to 60 percent of residential water in San Diego is used outdoors for landscape, this project is designed to motivate people to replace ultra thirsty lawns with attractive, drought resistant plants," states Muir.

Anyone interested in California-Friendly landscaping principles can visit www.bewaterwise.com for information on irrigation schedules, plant selection, and much more. Please visit www.omwd.com to learn more about the project, its partners, their services, and landscape and irrigation system design.

Water Conservation News – Fall/Winter 2005-06

Ag: Implementation

Ag: Research & Development

Urban: Implementation

Urban: Research & Development

	APPLICANT	PROJECT	REC	APP SHR	ADJ COST	COMMENTS
1	Lost Hills Water District 4129	7N Canal Lining	\$245,760	\$61,440	\$307,200	Approve requested fund
2	Lost Hills Water District 4130	4 Canal Lining	\$559,140	\$186,380	\$745,520	Approve requested fund
3	Amador Water Agency 4163	Canal to Main line	\$500,000	\$14,532,281	\$15,032,281	Applicant's local benefits are un
4	Western Canal Water District 4008	Replacement & Automation of Elevation Control Structure 875	\$104,929	\$314,786	\$419,715	Fully fund
5	Patterson Irrigation 4038	Decision Supp for Impl & Eval of Ag Wtr Reuse BMPs to Improve Dist-Lvl Irrig Eff	\$775,000	\$725,000	\$1,500,000	Approve \$775,000 to fund tasks
6	Yolo County Fld Control & Water Cons Dist. 4128	Yolo County Flow Monitoring Network	\$272,000	\$327,144	\$599,144	Fully funded
7	Anderson-Cottonwood Irrigation District 4161	Canal Modernization	\$1,775,266	\$40,000	\$1,815,266	Approve \$1,775,266 for scaled-
8	Modesto Irrigation District 4168	Ditch Pipeline Replacement	\$500,000	\$529,000	\$1,029,000	Fully fund
9	Deer Creek Irrigation District 4013	Deer Creek Ag Water Use Eff Prog Near-Term Sys Impr Proj	\$1,154,254	\$0	\$1,154,254	Approve \$1,154,254. Monitoring
10	Stevenson Water District 4164	Lateral Canal Piping	\$896,000	\$107,200	\$1,003,200	Approve requested fund. Applic
11	South Feather Water and Power Agency 4090	Canal Seepage Reduction Program	\$0	\$0	\$0	Do not fund. This implementation
12	Oakdale Irrigation District 4116	Tailwater Recovery Program	\$731,500	\$1,377,750	\$2,109,250	Fully fund
			\$7,513,849	\$18,200,981	\$25,714,830	State grant adjusted to \$6,743
1	University of California, Davis 4032	Monitor Wetting Front Advance Rate for Iri Manage in Flood Iri Alfalfa Prod Sys	\$197,343	\$0	\$197,343	Complete proposed work in two
2	Regent of the University of California 4089	Benefits and Costs of Deficit Irrigation in Alfalfa	\$632,000	\$0	\$632,000	Reduce crop loss payment to \$1
3	University of California, Davis 4070	Water Use Efficiency in Sacramento Valley Rice Cultivation	\$428,000	\$39,005	\$467,005	Eliminate third year of the projec
4	California State University, Monterey Bay - Foundation 4063	Developing of the VITicultural Information System (VITIS) for Vineyards	\$118,590	\$0	\$118,590	Fund verification of VISM model
5	University of California, Davis 4115	Calif Regulated Deficit Irrigation Prog & Remote Sensing to Quantify Evapotrans	\$563,000	\$1,126,000	\$1,126,000	6 sites to include 2 almond (SJV
6	United States Department of Agriculture 4015	Improved Water Use Efficiency for Vegetables Grown in the San Joaquin Valley	\$248,000	\$260,000	\$508,000	Fund project for two years. Loca
7	University of California, Davis 4046	Ground-Based Remote Sensing Tech for Improved Ag Water Use Eff In Furrow Irr	\$0	\$0	\$0	No more research projects funde
8	California Poly Technic State University Foundation 4047	Technology Transfer to Irrigation Districts	\$387,500	\$127,800	\$515,300	Min 25 rapid appraisals including
9	Glenn Colusa Irrigation District 4133	Regulating Reservoir Feasibility	\$257,000	\$51,400	\$308,400	Fully fund
10	University of California, Davis 4102	Updating Crop Coeff Information to Improve Crop Water Est	\$0	\$0	\$0	No more research projects funde
11	San Joaquin County Resources Conservation Dist 4158	Expanded Mobile Irrig Lab and Irrig Workshops in Spanish	\$60,000	\$67,560	\$127,560	Fund 40 evaluations at \$1,000 e
12	Anderson-cottonwood Irrigation District 4166	Chum Creek Lateral Improvement \$144,000	\$5,000	\$149,000		Fully fund
13	Deer Creek Irrigation District 4021	Deer Creek Ag Water Use Eff Prog Long-Term Sys Impr Feas Invest	\$288,180	\$0	\$288,180	Outreach (\$13,776) funded in Se
14	Orland Unit Water Users Association 4022	Orland Project Regulating Reservoir Feasibility Investigation	\$168,153	\$8,000	\$176,153	Approve three step funding agre
15	Biggs-West Gridley Water District 4170	Regional Water Measurement Program	\$50,000	\$27,000	\$77,000	Fund Tasks 1 (\$3,800), Task 2 (\$
16	Reclamation District 108 4126	Reclamation/BWMP Cooperative Water Measurement Study	\$318,803	\$161,000	\$479,803	Fund Task 1 through 8 with State
17	Yolo County Resource Conservation District 4095	Yolo/Colusa Mobile Wtr Lab Integr Water Qual, On-Farm Irrig Wtr Manage Impr	\$100,500	\$14,000	\$114,500	Do 60 evaluations for \$1500 eac
18	Agricultural Water Management Council 4096	Ag Water Management Informational Resources Directory	\$62,680	\$0	\$62,680	Fully fund
19	University of California, Davis 4101	California Irrigation Management Information System Phase II	\$0	\$0	\$0	No more research projects funde
20	California State University, Fresno 4113	Optimizing a Tailwater Return System to Improve Water Quality	\$0	\$0	\$0	No more research projects funde
21	Reclamation District 108 4162	Sac River BWMP Sub-Basin-Lvl Water Man Prog Demo Proj	\$200,193	\$264,700	\$464,893	Fund at \$200,193 for meter inst
			\$4,223,942	\$1,588,465	\$5,812,407	Grant reduced to \$4,108,612
1	Contra Costa Water District 4014	High Efficiency Toilet and Urinal Replacement Program	\$647,446	\$647,446	\$1,294,892	Fully fund
2	Inland Empire Utilities Agency 4110	Multi-Family UFL Toilet Direct - Install Program	\$1,650,133	\$2,436,659	\$4,086,792	Fully fund
3	Municipal Water District of Orange County 4131	Industrial Process Water Use Reduction Program	\$404,801	\$414,208	\$819,009	Fully fund
4	City of Los Angeles 4172	Cooling Tower Conductivity Controller Replacement Program	\$350,000	\$675,000	\$1,025,000	Fully fund
5	California Urban Water Conservation Council 4139	Statewide Rebate Prog for Cooling Tower Conduct Controllers	\$349,714	\$606,000	\$955,714	Limit to about 200 rebates, inste
6	City of Los Angeles 4134	Los Angeles City Park Irrigation Efficiency Program	\$362,000	\$778,970	\$1,140,970	Fully fund
7	California Urban Water Conservation Council 4156	Statewide Urban Water Agency One-Stop Rebate Program	\$1,250,000	\$1,441,000	\$2,691,000	DWR staff to negotiate administr
8	City of West Sacramento 4173	Parks Irrigation Retrofit	\$324,551	\$0	\$324,551	Applicant is disadvantaged com
9	El Dorado Irrigation District 4091	EID CII/Multi-Fam Lands Sub-Meter & ET Controller Install Proj	\$83,098	\$84,201	\$167,299	Fully fund
10	City of Sacramento 4025	Park Irrigation Infrastructure Improvements	\$754,000	\$143,000	\$897,000	Limit \$10,000 for monitoring/ass
11	San Benito County Water District 4081	Water Softener Rebate Program	\$300,000	\$305,560	\$605,560	Fully fund
12	Metropolitan Water District of Southern California 4029	Residential High Efficiency Clothes Washer Rebate Program	\$1,660,000	\$1,992,000	\$3,652,000	Data & evaluation indicates the
13	City of Pittsburg 4033	Innovative Irrigation Saving Our Delta "I2SOD"	\$0	\$0	\$0	Applicant doesn't make a compo
14	City of Port Hueneme 4071	Citywide Meter Retrofit and System Audit Program	\$345,324	\$1,037,973	\$1,383,297	Fund one year of project, 1,733
15	City of Cathedral City 4005	Landscape Irrigation System Upgrade	\$36,900	\$54,450	\$91,350	Fully fund
16	Newhall County Water District 4073	Residential ET Controller Rebate Program	\$55,332	\$165,997	\$221,329	Applicant is found locally cost eff
17	Metropolitan Water District of Southern California 4064	California Friendly Communities	\$423,150	\$154,000	\$577,150	Fund multi-family portion of proje
18	City of Los Angeles 4142	Large Landscape "Smart Irrigation" Program	\$183,750	\$187,420	\$371,170	Fund at 50 percent
19	Metropolitan Water District of Southern California 4067	High-Efficiency Toilet Rebate Program	\$1,000,000	\$840,000	\$1,840,000	Limit to \$1,000,000 and limit pro
20	Los Angeles County Waterworks District 4031	Residential Water Use Audits Program	\$386,640	\$313,000	\$699,640	Fund voluntary residential water
21	Richgrove Community Services District 4039	Richgrove Water Meter Retrofit Program	\$119,683	\$0	\$119,683	Fully fund
22	West Basin Municipal Water District 4080	West Basin Municipal Water District Restroom Retrofit Project	\$294,834	\$294,834	\$589,668	Fund one year only, 248 rest roo
23	Electric and Gas Industries Association 4127	Regional Resource - Efficient Clothes Washer Rebate Prog	\$1,534,342	\$2,175,816	\$3,710,158	Initial funding recommendation
24	Los Angeles County Waterworks Districts 4042	Comm, Indust, Instl Water Use Audits & Ded Lands Meter Install Prog	\$108,681	\$326,046	\$434,727	Fund 1,788 audits. Project is Lo
25	Friars Village Homeowners' Association 4069	Landscape Irrigation System Upgrade	\$46,870	\$64,220	\$111,090	Fully fund
			\$12,671,249	\$15,137,800	\$27,809,049	
1	California Urban Water Conservation Council 4109	California WaterStar Initiative: Water Efficiency Product Rating & Labeling	\$217,000	\$108,600	\$325,600	Approve tasks 1 through 3 at 67
2	Alameda Point Collaborative 4086	Water Efficient Landscaping	\$308,000	\$0	\$308,000	Fund irrigation system only, not
3	Irvine Ranch Water District 4054	Statewide Study of Water Use Efficiency	\$761,668	\$235,000	\$996,668	Fully fund
4	California Urban Water Conservation Council 4132	Urban Water Efficiency Technical Assistance Program	\$506,913	\$159,664	\$666,577	Some tasks eliminated. Limit ad
5	South Yuba River Citizens League 4112	"The Great Water Mystery" Assemblies & School Water Audit	\$51,717	\$53,718	\$105,435	Fund one year of school assemb
6	Irvine Ranch Water District 4017	Rotary Nozzle Retrofit Study	\$71,819	\$60,166	\$131,985	Fully fund
7	Alameda Point Collaborative 4085	Powshares Demonstration Garden	\$193,460	\$0	\$193,460	Fully fund
8	California Urban Water Conservation Council 4136	Smart From the Start	\$104,496	\$21,583	\$126,079	Fund "New Home Construction
9	UC Regents - Lawrence Berkeley Nat'l Lab 4174	Determin Waste of Water & Energy in Res Hot Water Dist Sys	\$500,000	\$543,725	\$1,043,725	Fund new houses study (elimina
10	Metropolitan Water District of Southern California 4114	Online/Web-Based Irrigation Efficiency Training	\$77,500	\$77,500	\$155,000	Fund 1 residential series class &
11	Santa Clara Valley Water District 4083	Water Efficiency Demonstration Garden	\$146,000	\$48,173	\$194,173	Fund one acre demo garden for
12	Central Basin Municipal Water District 4020	Comm Lands Wireless Valve End Use Manage Research Proj	\$164,052	\$138,000	\$302,052	Fund 45 controllers
13	Clovis Botanical Garden Committee 4036	Clovis Botanical Garden Expansion	\$72,362	\$24,603	\$96,965	Fund exhibits, grading, paths, irr
14	East Bay Municipal Utility District 4141	New Business Plan Review Program For Water Use Eff	\$50,000	\$50,000	\$100,000	Fund portion of Guidebook cost.
15	Efficiency Partnership 4118	Flex Your Power at the Tap	\$38,551	\$5,560	\$44,111	Fund Market research, focus gro
16	UC Regents, Agr & Nat Res/UCCE San Bern Co 4049	Cons Water & Improving Plant Health in Large So Calif Lands	\$130,009	\$39,668	\$169,677	Fund Year One - irrigation sched
17	Pacific Inst for Studies in Dev, Environ, & Security 4157	Dev of a Water Use Efficiency Impl Cost & Cost Effect Model	\$142,385	\$0	\$142,385	Approve requested fund. Include
18	California State University, Fresno Foundation 4111	Irrigation System Audits by Students	\$159,392	\$0	\$159,392	Fund project at 50% level.
19	East Bay Municipal Utility District 4143	Multi-Family Submeter Pilot Study	\$150,000	\$150,000	\$300,000	Fully fund
20	Stockton East Water District 4119	Children Museum WUE	\$54,000	\$6,000	\$60,000	Fully fund
21	City of San Diego 4057	Recirculating Hot Water Systems: Res Survey & Feas Study	\$30,100	\$0	\$30,100	Fully fund
22	University of California, Davis 4034	Improvement in CIMIS Calif Statewide Potential Evap Maps	\$214,919	\$0	\$214,919	Fund at reduced level. DWR neg
23	Water Education Foundation 4151	Project Wet (Urban Focus)	\$79,599	\$0	\$79,599	Fund Project Wet for approximat
			\$4,223,942	\$1,721,960	\$5,945,902	Grant reduced to \$4,185,391.

The Proposition 50 Water Use Efficiency Funded Projects

By Manucher Alemi

In November 2002, California voters passed Proposition 50, The Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002. This created a new grant program to implement the Water Code Chapter 7, Section 79550 (g) of Proposition 50. Then on November 15, 2004, the California Department of Water Resources issued a Proposal Solicitation Package (PSP) with a deadline for application of January 11, 2005. The PSP solicited proposals from local public agencies for implementation or research and development projects.

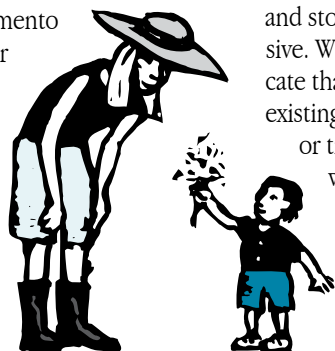


A total of 168 proposals were accepted requesting \$146.5 million in grants. In 2004, DWR had about \$34 million for its first cycle of Proposition 50 grant funding. The approved projects are shown in Table I-IV. As a result, DWR awarded \$28.6 million in grant funding to 75 projects. This represents \$11.7 million in grant funding to 28 agricultural projects with an estimated \$19.8 million in local match and \$16.8 million in grant funding to 47 urban projects with an estimated \$16.9 million in local match. DWR has since developed agreements with the grantees to implement the projects. The next cycle of water use efficiency grants is expected in fiscal year 2006-07. For more information visit www.owue.water.ca.gov/finance/index.cfm

SRCSD's Master Plan: Water Recycling Planning for the Next Two Decades

*By Sacramento Regional County Sanitation
District Staff*

Recognizing the importance of recycled water as part of the water portfolio, the Sacramento Regional County Sanitation District has initiated the Water Recycling Program. This program is the first of its kind in Sacramento County and provides for an environmentally responsible and safe water supply for irrigation, industrial uses and environmental restoration. Using recycled water to meet these needs reduces the region's dependence on groundwater and surface water supplies for non-potable purposes.



industrial demands

- Investigating potential use of recycled water for irrigation of non-food crops. This could include replacing or augmenting use of surface or groundwater for agricultural purposes such as irrigation of alfalfa and other animal fodder crops
- Examining the possibility of installing purple pipes in new developments during construction when recycled water infrastructure (piping, pumping and storage tanks) is the least expensive. WRMP planning estimates indicate that purple pipe installation into existing developments can be double or triple the cost of installation with new developments
- Determining where the most logical place is to treat and supply communities with recycled water. Treatment could be at the existing SRCSD water recycling plant, a new satellite facility closer to the user, or possibly both.

In 2004, the SRCSD Board of Directors approved a goal of expanding the Water Recycling Program to 30-40 million gallons per day (MGD) in the Sacramento Region over the next 20 years. Ultimately, SRCSD strives to achieve an appropriate balance between discharge of highly treated wastewater to the Sacramento River and water recycling expansion within the Sacramento Region. District staff and an experienced water-recycling consultant team are actively pursuing potential future water recycling projects to meet the large-scale water recycling goal through the development of a Water Recycling Master Plan (WRMP)--a draft of the plan is anticipated for completion in 2006. The WRMP will explore water-recycling opportunities through:

- Having open dialogue with stakeholders, such as cities, land use authorities, and water purveyors that serve them to develop water recycling opportunities within SRCSD's service area
- Investigating potential uses of recycled water for traditional landscape uses, such as irrigation of parks, golf courses, recreational fields and, potentially,

SRCSD's investment in water recycling began with construction of a water recycling plant located at the Sacramento Regional Wastewater Treatment Plant (SRWTP) in Elk Grove, CA. The water recycling plant began operation in April 2003 and currently delivers a daily peak production of 3 MGD with an average daily production of 1.0-1.5 MGD. The plant is expandable to 10 MGD. All recycled water produced by SRCSD is tertiary treated and meets Title 22 requirements for unrestricted reuse. Currently, recycled water is being used in the Laguna West/Stonelake Communities of Elk Grove to irrigate parks, schoolyards, commercial landscapes, roadway medians and freeway interchanges. Additionally, recycled water is used for landscape irrigation and other non-potable water uses throughout SRWTP.

SRCSD is currently conducting a 12-month membrane filtration pilot study as part of its continual pursuit of a more efficient and innovative water recycling facility. There are four micro/ultra-filtration membrane technologies being tested for future



SRCSD won two Gold "Cappie" Awards from the Sacramento Public Relations Association for both its overall water recycling public relations program and for its water recycling booth

expansion of the existing water recycling plant. SRCSD's goal is to increase the production of future recycled water in a safe and cost effective manner to reliably meet future demands. The pilot study is anticipated to be completed in 2006.

Lastly, as public involvement is a key to a successful water recycling program, in 1998 SRCSD began a proactive public outreach program to help educate the public about water recycling and promote the future of SRCSD's water recycling program. Focus groups and a community advisory committee (consisting of public officials, community and industry leaders, commercial, industrial, and residential users of recycled water and SRCSD staff) developed public education materials, including brochures, community event exhibits, fact sheets, and a school education program. Additional outreach was conducted through customer mailing, billboard advertising campaign, and articles in area media outlets.

Find more information on SRCSD's Water Recycling Program at www.purplepipes.com, or contact Kent Craney at (916) 876-6018 or email at craneyk@saccounty.net.

Task Force Tackles Landscape Water Waste

By Katie Shulte Joung

Water, water everywhere: Sprinklers are watering driveways, not plants. Native plants suffer death from drowning. Are California cities running out of water or do our landscapes have a drinking problem?

In Assembly Bill 2717 sponsored by John Laird (D-Santa Cruz) the California Legislature and Governor Arnold Schwarzenegger asked the California Urban Water Conservation Council to convene a Landscape Task Force with representatives from the landscape and building industries, water suppliers, environmental groups, and government agencies to evaluate landscape water use efficiency and to make recommendations for improvements. "California uses more water on landscape irrigation than all other residential water uses combined," says Marsha Prillwitz, the project manager for the Task Force. "And much of this water is being wasted, not benefiting our plants or lawns."

The report follows several other important studies, including the most recent draft of the California Water Plan, that says water conservation, especially in landscaping, could be the largest 'new source' of water to meet California's growing thirst. "We know improving water use efficiency is one of the most cost-effective ways to extend existing water supplies and protect our environment by keeping more water in streams, rivers and lakes so it will be there for fish and wildlife," says Mary Ann Dickinson, Executive Director of CUWCC. "This report give us a road map as to how we can have attractive, California-friendly landscaping, save water, and save money for consumers and water suppliers."

The stakeholder-based Landscape Task Force convened in February 2005 with 30 members, including representatives of the California Department of Water Resources, State Water Resources Control Board, California Bay-Delta Authority, United

States Bureau of Reclamation, landscape industry groups, manufacturers, the building and construction industry, urban water suppliers, environmental advocacy and environmental justice groups, the League of California Cities, the California State Association of Counties, and the University of California. Four technical work groups, comprised of 84 participants, conducted 30 meetings over the past year. Two public workshops were conducted to solicit public comment. CUWCC facilitated the meetings, provided staff support and raised funds to finance this project.

The recommendations in the report acknowledge and reflect the improvements in landscape technology and management in California over the past 15 years (since adoption of the California Model Water Efficient Landscape Ordinance), but anticipates the need to improve landscape water use efficiency even more over the next 25 years. The recommendations include changes to California law, revisions to the Model Ordinance, and amendments to the California Urban Water Conservation Council's Memorandum of Understanding and Best Management Practices. The legislative process, regulatory process, and CUWCC's governing rules all entail extensive fact gathering and public participation. The Landscape Task Force recommendations are not intended to supersede the existing processes, but rather to provide ideas and impetus to these institutions based on broad support from the stakeholder groups involved in the task force process. The Task Force hopes that ample weight be given to the extensive deliberations and collaborative process leading to these recommendations.

The report recommends pricing water to promote water conservation, designing landscapes to meet more stringent water budgets, and enforcing existing landscape water conservation ordinances. The report also recommends increasing the use of recycled water for irrigating landscapes, installing separate meters for landscapes, and requiring the use of "smart" irrigation controllers.

The Top 12 Recommendations supported by the Landscape Task Force are:

1. Adopt water conserving rate structures as defined by the Task Force.
2. Reduce the ET Adjustment Factor in the Model Ordinance and review the ET Adjustment Factor every ten years for possible further reduction.
3. Enforce and monitor compliance with local ordinances and the state model ordinance.
4. Require dedicated landscape meters.
5. Promote the use of recycled water in urban landscapes.
6. Require that local ordinances be at least as effective as the state model ordinance.
7. Increase the public's awareness of the importance of landscape water use efficiency and inspire them to action.
8. Require Smart Controllers.
9. Adopt and enforce statewide prohibitions on overspray and runoff.
10. Provide training and certification opportunities to landscape and irrigation professionals.
11. Support upgrading the California Irrigation Management Information System Program.
12. Adopt performance standards for irrigation equipment.

In addition to the legislative, regulatory, and administrative changes proposed by the Task Force, there are recommendations regarding public education, training and certification, research, and financial incentives. When taken together, implementation of the recommendations and corresponding actions will chart a bright future for water efficient California landscapes.

For a copy of the report and additional information on the Landscape Task Force visit www.cuwcc.org/ab2717_landscapetaskforce.lasso. For more information about CUWCC contact Katie Shulte Joung at (916) 552-5885.



Estimating Urban Landscape Water Use

By Simon O. Eching and Richard L. Snyder

In California, the landscape industry is huge and there is constant increased competition among water users. Consequently, managing irrigation to optimize efficient water use is critically important to stretch existing water supplies. To help with this, a Microsoft Excel application program Landscape Irrigation Management Program (LIMP) has been designed to help landscape professionals and homeowners to calculate evapotranspiration (ETo) rates, determine landscape coefficient (KL) values, estimate landscape evapotranspiration (ETL) and determine irrigation schedules. LIMP is part of an effort to make urban landscape water management more scientific by accounting for factor that affects it.

LIMP accounts for microclimate, vegetation type, plant density, stress conditions, slope, orientation, and rainfall effect on ET. Regional ETo rates are estimated by entering monthly average weather data from a good site (such as the California Irrigation Management Information System) or by entering daily mean ETo by month directly into the program. If weather data are input, then daily mean ETo is estimated using the monthly Penman-Monteith equation. A microclimate coefficient (Km) is used to adjust the ETo for the local microclimate differences from the regional ETo. The regional and local ETo values are compared to determine the microclimate coefficient (Km).

In addition to accounting for local and regional weather differences, one can adjust the Km factor for slope and aspect of the local site. Slope is used to describe

how steepness the landscape is, and orientation describes whether the landscape faces east, south or west. A vegetation coefficient (Kv), referred to in WUCOL as species coefficient, is used to account for the difference in well-watered vegetation ET and the ETo. To account for sparse canopies, a plant density coefficient (Kd), which is based on percentage ground cover, is used. LIMP uses a stress coefficient (Ks) to adjust for reductions in ET due to water stress. Using a model to estimate soil evaporation as a function of ETo rate and rainfall frequency, LIMP estimates the evaporation expected from bare soil in a particular location. Then an evaporation coefficient (Ke) is computed as the ratio of the bare soil evaporation to ETo. This provides a baseline (i.e., minimum value) for KL. LIMP calculated KL can be used in controllers or the program can use to schedule irrigation.

The KL value is determined as:

$$KL = Km \times Kv \times Kd \times Ks \times Ke$$

Landscape ET is calculated as:

$$ETL = ETo \times KL$$

The LIMP Excel file consists of the following worksheets:

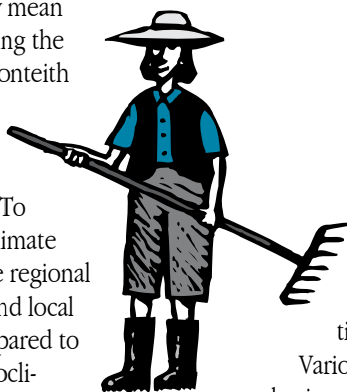
- weather
- ETo
- Output
- RT
- CRT
- KL_Mult
- RT_Mult
- CRT_Mult.

There are some additional hidden worksheets that are used for internal calculations. The worksheet weather is used to estimate regional ETo and local ETo.

Various adjustment coefficients are also input or determined in the worksheet weather. Daily ETo rates are estimated from the monthly data by a hidden worksheet and displayed in the worksheet ETo. The worksheet OUTPUT contains all coefficients and ET calculations. LIMP also supplies information for irrigation scheduling such as daily sprinkler runtimes needed

to replace the ETL losses). The information is displayed in the worksheet RT. Cumulative runtime minutes are displayed in the worksheet CRT. LIMP allows for scheduling of up to 20 zones by inputting KL values in the worksheet KL_MULT. Once KL values are entered into the worksheet, a column of runtime values for each of the 20 zones is created in the worksheet RT_Mult and the corresponding cumulative runtime requirement is provided in the worksheet CRT_Mult. The coefficients and ET values are then plotted on various charts.

For additional information contact Dr. Richard Snyder at e-mail rlsnyder@ucdavis.edu or Simon Eching at e-mail seching@water.ca.gov. A copy of LIMP.XLS is available on Dr. Richard Snyder's Web site at <http://biomet.ucdavis.edu>.



On-Site Self Regenerative Water Softeners and Recycled Water

By Nancy King and Fawzi Karajeh

Over the past forty years, the salt content of wastewater has become a topic of concern to water and wastewater agencies; high salinity degrades water quality, and thus, impacts residential, commercial, industrial, and agricultural water users. High salinity levels can also negatively impact groundwater, wastewater, and recycled water resources, and utility distribution systems.

In the last few decades increasing numbers of California residents have installed water softeners in their homes to reduce problems caused by hard water (water high in calcium/magnesium salts.) While not a health concern, hard water can result in the formation of spots on dishes or vehicles, scaling of pipe walls and plumbing fixtures, and slightly higher soap requirements for laundry and dish washing. Salts are present in potable water, primarily from natural sources but also from discharges of agricultural, industrial, and municipal discharges into rivers. Unfortunately, the use of softeners, particularly onsite, self-regenerative water softeners,

has led to increased salt in recycled water. Water softeners, through a cation exchange media, soften the water by exchanging the calcium and magnesium ions for sodium and potassium.



Any salt added to wastewater can push recycled water agencies using traditional water recycling treatment processes into non-compliance with their water quality permits and or make the recycled water unmarketable for irrigation use, the primary use throughout the State. In many cases, the potable water is already high in total dissolved solids (TDS), and water softeners compound the problem, creating difficulties attracting customers for the

higher saline recycled water. Salinity or TDS is the concentration of mineral salts dissolved in water. Sodium reduces soil moisture penetration, TDS reduces crop yields, and high level of chloride is toxic to plants. The discharge of salts (i.e. calcium, magnesium, sodium, sulfate, and chloride) creates problems for the environment. Furthermore, salts are difficult to remove using traditional treatment processes.

For this reason, concerned agencies have looked to source control as a method of dealing with salts. Residential self-regenerating water softeners (SRW softeners) — also known as automatic water softeners, rock salt water softeners, or “ion exchange” water softeners — are an easily identifiable and preventable source of salt because they use sodium chloride (rock salt) to regenerate the exchange capacity of the resin. After this regeneration the salt is discharged and

results in excessive amounts of salt ending up in the waste stream.

To deal with the problem in California, several recycled water producers banned SRW softeners. Irvine Ranch Water District placed a ban in 1966. Then the State Health and Safety Code added technical standards for SRW softeners in the 1970s. In 1978, a state law (SB 2148, 1978) prohibited local bans on residential water softeners; even still, some local jurisdictions banned them. Some of these bans were challenged and overturned in court in 1992. Then in 1996 and 1997, the Court of Appeals upheld lower court rulings that local ordinances banning water

softeners are invalid because of the existing State statutes that forestalled new local water softener standards or regulations. To further restrict on-site residential water softeners, local agencies would have to change existing State statutes. In response, IRWD and the Association of California Water Agencies sponsored Senate Bill 1006

Continued on Page 14

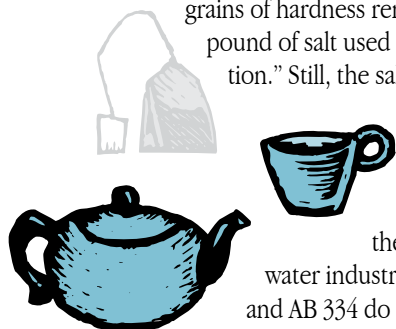


Left to Right: Timer Water Softener. This outdated water softener is regenerated based on a set time interval. Demand Initiated Water Softener. This newer more water efficient water softener senses when regeneration is necessary.

On-Site from Page 13

(Costa, 1999) which amended SB 2148 to set a framework for the restriction of self-regenerative water softeners. Then in 2003, Assembly Bill 334 -Water Softening and Conditioning Appliances - amended SB 1006 to allow local agencies flexibility improve recycled water quality through source control measures.

The water softener industry met the challenge by designing new water softeners which meet the criteria "An appliance installed on or after January 1, 2002, shall be certified by a third party rating organization using industry standard to have a salt efficiency rating of no less than 4,000 grains of hardness removed per pound of salt used in regeneration." Still, the salt generated from water softeners continues to challenge the recycled water industry. SB 1006 and AB 334 do not apply to existing water softeners produced and installed prior to the adoption of any ordinance. The appliances are grandfathered in and can operate as usual. Also, even the most efficient water softener system still requires a regular discharge of salt brine into local wastewater stream. Although some headway has been made, alternative strategies are still needed.



One local agency, Monterey Regional Water Pollution Control Agency supplies recycled water to irrigate almost 12,000 acres of food crops. Although the five year Monterey Wastewater Reclamation Study for Agriculture did not see a decrease in soil health or crop yields, the long term effects of recycled water's salt content is a major concern to growers. As a result of growers' concerns, MRWPCA has examined the recycled water quality and found that sodium levels were nearing the upper limits of the acceptable range. MRWPCA found that 37 percent of the source-water's salt load was from residential, commercial and industrial water softener brine.

The State has also addressed the issue of salt from SRW softeners. The Recycled Water Task Force (RWTF) report recommended to the State legislature that local agencies be empowered through legislation to regulate the discharge of residential water softeners in the same manner as other sources of discharge into sewers and encouraged water softener studies to develop alternatives for salt reduction in recycled water. Another RWTF recommendation asked local agencies to educate consumers regarding the impacts of SRW softeners through publicity campaigns and to offer financial incentives to upgrade older inefficient appliances. Assembly Bill 334 (Goldberg, 2003) Water Softening and Conditioning Appliances was adopted in

response to the RWTF recommendations.

The State has supported further efforts to reduce salt loading when the California Department of Water Resources awarded Santa Clara Valley Water District with a



2002 Proposition 13 Grant for their Pilot Water Softener Rebate Program. This award winning pilot program provided 400 residents with a rebate of \$150 for the replacement of their inefficient pre-1999 water softener system. The newer models, demand-initiated regeneration water softeners, more efficiently sense when the resin must be recharged with salt and regenerate the resin as needed. Thus, these types of water softeners use less water and less salt.



Water Hardness is defined in SB 1006 as

"the total of all dissolved calcium, magnesium, iron and other heavy metals, that interact with soaps and detergents in a manner that the efficiency of soaps and detergents for cleaning purposes is impaired. Harness is expressed in grains per gallon or milligram per liter as if all such salts were present as calcium carbonate."

Managing *from Page 3*

Five Points and in Buttonwillow, California. Workshop presenters provided information of various topics on the design and operation of an IFDM system including:

- FDM system description
- IFDM system design
- drainage water and plant selection
- laws and regulations/monitoring, and soils

The manual contains an empirical analysis and spreadsheet to assist potential IFDM owners determine farm-specific costs, benefits, and the net financial impact of implementing IFDM. An Appendix CD consists of a PowerPoint presentation by DWR on the “Design of the Solar Evaporator for the IFDM system at Red Rock Ranch.” Attendees who participated in the field tours at Red Rock Ranch and AndrewsAg, Inc. were very impressed with the IFDM system layout and operation referenced in both manuals.

The impacts of the IFDM manuals, workshops, and field tours:

- Increased the awareness of IFDM technology.
- Facilitated the training of farmers and professionals in IFDM concept.
- Expanded the sharing and transfer of IFDM technology.

The release of the new manual will help to meet the need of providing landowners and professionals’ information and technical support on how to operate an IFDM system. To order a free copy (limited quantity printed), contact Lisa Basinal, Center for Irrigation Technology at (559) 278-2066. To get a copy visit www.sjd.water.ca.gov/drainage/ifdm/manual/index.cfm.

Urban *from Page 1*

because of space limitations for adequate fetch and obstructions from buildings and other structures. Weather data from non-standardized sites are likely to be erroneous in representing the microclimates of irrigated surfaces. Air temperature on warm summer days, for example, can be higher in an urban environment by as much as 8°F compared to adjacent vegetated surfaces with no water stress. This difference is mainly because of what is known as an “urban heat island,” a phenomenon resulting from buildings and paved surfaces in the city absorbing more solar energy and converting it to heat.

Yet weather stations in the urban environments have become increasingly necessary to efficiently manage water resources. Consequently, because of the increased demands for CIMIS data from urban users, the difficulty of finding standardized sites in these areas, and the advent of new technologies, such as automated landscape irrigation controllers, it has become necessary to undertake a non-ideal site studies using paired non-ideal and reference weather stations.

A recent study by the University of California, Davis extension program has outlined scenarios under which non-ideal weather stations can be effectively sited and used. Although this study was conducted on a smaller scale, it has clearly indicated the potential for using weather data from non-ideal sites for irrigation purposes. The study also suggested a scenario in which certain weather parameters can be measured at the non-ideal sites and the remaining parameters taken from a nearby CIMIS station, provided it has been determined that the latter do not change significantly on a regional scale. It should be noted these non – ideal sites can be situated on surfaces other than grass but still need to have upwind fetch and uninterrupted solar radiation. The study

concluded by recommending an extensive feasibility study by DWR and other agencies in different regions of California.

Accordingly, CIMIS, in cooperation with the Council, is planning to conduct a state-wide project to investigate the possibility of installing stations in non-ideal environments and converting the collected data into an equivalent “ideal” condition. This will be achieved by setting up paired “ideal” and non-ideal stations in a given study area. Data from the non-ideal sites of the pairs will be correlated with the cor-

responding data from “ideal” sites. These correlations will then be used to convert the non-ideal site data into an equivalent “ideal” site data after the completion of the study. The converted values thus represent values that

would have occurred at the non-ideal sites if surfaces were ideal.

CUWCC and DWR will be forming a technical advisory committee consisting of many members from different regions of the State. This committee will meet regularly during the project period. We welcome any one or any group interested in taking part in this important investigative project and encourage those interested to contact DWR’s Kent Frame at (916) 651-7030, Bekele Temesgen at (916) 651-9679, or CUWCC’s Karl Kurka at (916) 552-5885.



WATER CONSERVATION NEWS

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Address Correction Requested
